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Home Service Information System Design for Health Workers

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***Keywords*— Home Service, Information System, SDLC, Health Works**

***Abstract*—** *Home Service is a set of health care systems that includes patient care and consultation, baby spa, and many other health services. Home Service adopts the same system flow as Start Up in general. With the limitation of the problem only on health workers, nurses and midwives only. The method used in this research is SDLC. The purpose of developing this research framework is iterative development, based on the User engineering approach. SDLC has stages starting from the planning, analysis, design, implementation, and maintenance stages. The home service application has a flow starting from the registration made by the patient, through their account, the patient will be able to order the services they need. The application will automatically match their orders with nurses or midwives as service providers who have registered as partners. Partners can then confirm the services they can provide as well as the service schedule and fees.*

I. INTRODUCTION

The development of the world of technology today is getting faster, technology has penetrated various sectors ranging from the public, agriculture, service sectors to the health sector. The presence of technological innovations, especially in the health sector, is growing, this is certainly very much needed by the country of Indonesia, which has a very wide geographical condition that is needed especially by health facilities. One of the main challenges in healthcare industry is providing for large geographic distances. Issues like uneven distribution of clinical workforce and more costly resources for rural patients can not be avoided. Information technology (IT) can address these challenges and enhance healthcare services. For the last decade, the development of healthcare information system has been accelerated. There are quite a lot of tools to potentially support healthcare delivery such as telecommunications, web solutions, and social networking. Studies show that increased adoption of information system in healthcare leads to innovations that improve healthcare quality [1]. One of the said inovation is home service information system. This system facilitates the delivery of services at many levels. It supports activities such as planning and managing the performance of processes, also enabling the recording of information [2].

Home service information system enable patients more control of the service. It leads to a role transition from being passive (as the recipient of health services), to being more active, meaning patients would have choices and would be more involved in the decision-making process. Such a transition is triggered by the increasing usage of home service devices and software, access to healthcare information and online communities, as well as the use of personal health records maintained by patients themselves [3].

II. STUDY LITERATURE

2.1 Information System

Informatization has been the way to go in this era. With the rapid evolvement of technologies and scientific theories, traditional health care has gradually begun to digitize and to informationize. Through the development of IT-based technologies, low-cost health services, efficient supervision of the centralized management, and monitoring of public health can be realized [4]. It is not only a simple technological advancement, it is an all-round, multi-level change. These changes can be seen from various point of views such as information construction, service model, prevention and treatment process, and business management.

In terms of the information construction, the process shifts from clinical to regional medical. Shifting also occurs to the service model. It goes from desease-centered service to patient-centered service, which effects the prevention and treatment concept. It was widely assumed that health services are carried out as treatments that patients undergo after the fact. Now, the concept focuses on prevention. At last, all of the changes lead to a complete business transformation from general management to be more personalized [5]. This evolution aims to meet the individual needs of service users and enhancing their experience. Therefore, the quality of healthcare can be improved to represent the future development direction of modern health care [6].

2.2 Home Service

One of many ways the health care service industry holds the welfares of information systems for its personnel and patients is by offering a home service information system. It has manifested extensive practicality and application in healthcare services, reducing the cost of medical expenses, better operational proficiency and patient's safety, expanding functional capability in the healthcare sector [7]. This technology helps to spread medical knowledge to the isolated and secluded places. Home service enables the amalgamation and fruitful interchange of data between the utilizer and provider with a fully equipped IoT system containing operator devices, network components, electronics, and data storage and analyzers [8]. This approach has shown effectiveness especially in the COVID-19 pandemic. In addition, it helps to address significant health issues and better managing the health workers' work situation [9].

In parallel to the increasing implementation of home service, all over the world, follows various interests of healthcare system namely dehospitalization process, usage of hospital beds rationalization, cost reduction, and related organization (especially those of patient-centered care) [10]. As a contribution to the shifting of both the focus and the environment of healthcare system, the demand of home service is yet another challenge to be faced [11]. To give some contexts, there are a few driving factors concerning the new healthcare system; the aging process of the population, pregnant women and infant care, children with chronic diseases, adults who has degenerative conditions, and patients require palliative care, rehabilitation, or life support [12]. These needs explain the highly-anticipated innovation in healthcare system. It is natural that home service being the said innovation continues to increase in demand. Thus, the relevance of improving the home service implementation is highlighted in the current and future healthcare systems which goal is to contribute on the configuration of substitute healthcare networks and health services transformation [13].

From the service model perspective, the real need behind home service approach has been arguably questioned. It has been concluded that some reasons for inpatients due to specific health problems are consider expandable and unnecessary prolonged. In that case, home service is the more reasonable option. Beside the cost-efficient reason, it also represents the connotation of providing service quality, well-being, and comfort by allowing patients to remain in their places of choice [14].

The whole process of home service information system is navigated by the interaction between users (patients) and providers (health workers). The implementation of home service relies on the integration between the healthcare system and the user, in which is configured by the service provider. This role in particular is performed by a multidisciplinary team, who has the capability to provide the necessary service [15]. Considering all of the interactions between patients and health workers take place in patients' home, there would be a need for some adjusment and adaptation from both parties. In this case, patients play a much more active role from the jump. Starting with planning the service, choosing the provider, setting the time and location, and confirming to a specific service. Health workers, on the other hand, have more limited responsibilities [16].

III. METHODS

The development method used in this study is the System Development Life Cycle (SDLC). The selection of SDLC as a method in developing information systems in this study because SDLC is able to produce high-quality systems that are tailored to user needs [17]. The types of development models from the SDLC methodology vary such as prototype models, RAD models, agile models,

fountain models, v-models, RUD models, waterfall models, scrum models, iterative models, spiral models, big bang models, UP models, extreme programming.

After knowing the types of models that exist in the SDLC methodology. The researcher decided to use an iterative model because Iterative model is the model provides a new method of developing systems which could provide faster results, require less up-front information, and offer greater flexibility. With Iterative Development, the project is divided into small parts. This allows the development team to demonstrate results earlier on in the process and obtain valuable feedback from system users.

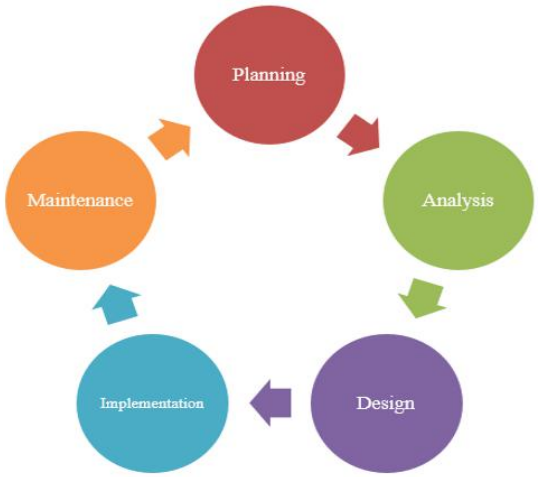

Fig. 1: The phases of Iterative Model

IV. RESULTS

This research, result obtained in the form of an information system for nurses and midwives medical personnel in the form of a mobile application "Siap Rawat". This application is based on android that can be operated on android smartphone. This application can be used in various service including baby spa, home care, exercises for pregnant women, and wound care.

4.1 Design Algorithm

The design algorithm used in this study is as follows:

Fig. 2: Figure Title below the figure

Figure 1, starting with registration as member, when registration has been carried out, an email will be sent to activate the account, but if it is not successful, will receive an email confirmation of account activation. Furthermore, if the email confirmation stage is successful, go directly to the main page. On the menus in the application will be shown. The is willing or not. The final stage will be agreed upon by the health service provider and consumer who will use the type of service.

4.2 Design User Interface

a. Member Register

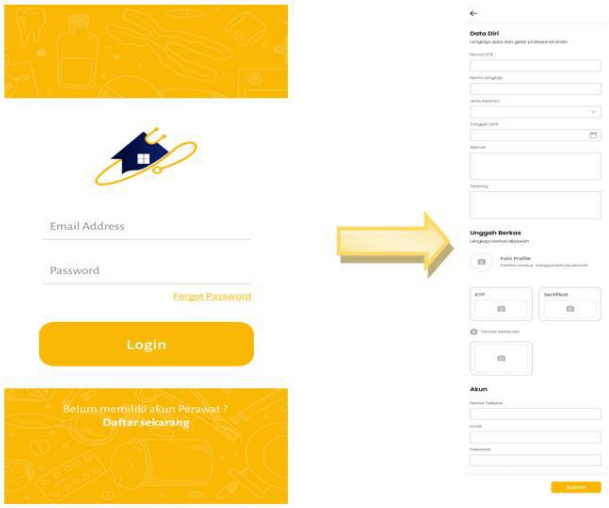

Fig. 3: Member Registration

b. Confirmation Email

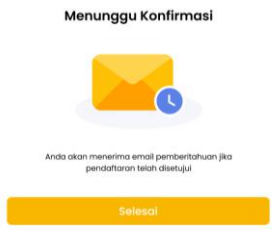

Fig. 4: Member Registration

c. Dashboard

Fig. 5: Member Registration

d. Service

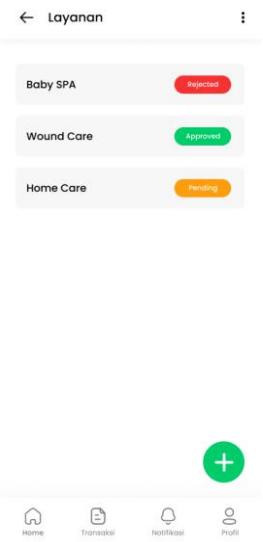

Fig. 6: Service

e. Patient Address

Fig. 7: Patient Address

V. CONCLUSION

Technological innovation, especially in the health sector, is currently needed not only for the general public but also for those who work as health workers. Indonesia's geographical conditions are one of the factors that hinder the maximum role of health workers for the general public who act as patients. The absence of an information system that has developed as a forum for bringing them together and also a conventional health care system is quite time-consuming for patients or the general public who need services from health workers, therefore the development of the "Siap Rawat" application is expected to be one of the alternative to answer this problem. This system was developed not only for health workers but also ready to be used by the general public, the working system of this application is the same as start-ups in general which offer special services for health workers on an application and the general public can make reservations for health services from home through the application. It is hoped that in the future this system will continue to be developed according to user needs and can run well so that it will become easier for health workers and the general public to meet their needs.

REFERENCES

[1] Y. K. Alotaibi and F. Federico, "The Impact of Health Information Technology on Patient Safety," *Saudi Med J.*, vol. 38, no. 12, 2017.

[2] H. Thimbleby, "Technology and The Future of Healthcare," *J. Public health Res.*, vol. 2, no. 28, 2013.

[3] S. Olson, *The Role of Human Factors in Home Health Care*. Washington D.C: National Academies Press, 2010.

[4] M. Usak, M. Kubiatko, M. S. Shabbir, O. V. Dudnik, K. Jermsittiparsert, and L. Rajabion, "Health Care Service Delivery Based on The Internet of Things: A Systematic and Comprehensive Study," *Int. J. Commun. Syst.*, vol. 33, no. 2, 2019.

[5] F. L. Rajão and M. Martins, "Home Care in Brazil: An

Exploratory Study on The Construction Process and Service Use in The Brazilian Health System," *Cien. Saude Colet.*, vol. 25, no. 5, 2020.

[6] N. Rapport, *Transforming Healthcare with Qualitative Research*, 1st editio. 2021.

[7] G. Lee, S. Yang, and E. Woo, "Past, Present, and Future of Home Visiting Healthcare Services based on Public Health Centers in Korea," *J. Korean Public Heal. Nurs.*, vol. 32, no. 1, 2018.

[8] V. Jagadeeswari1, V. Subramaniyaswamy1, R. Logesh, and V. Vijayakumar, "A study on Medical Internet of Things and Big Data in Personalized Healthcare System," *Heal. Inf. Sci. Syst.*, 2018.

[9] S. Tian, W. Yang, J. M. Le Grange, P. Wang, W. Huang, and Z. Yei, "Smart Healthcare: Making Medical Care More Intelligent," *Glob. Heal. J.*, vol. 3, no. 3, 2019.

[10] K. S. Kadar, F. Ardilla, A. Puspitha, and Erfina, "Implementation of Home Care Services by Community Health Centers (Puskesmas) in Makassar City, Indonesia," *J. Keperawatan Indones.*, vol. 25, no. 1, 2022.

[11] M. Mitchell and L. Kan, "Digital Technology and The Future of Health Systems," *Heal. Syst. Reform*, vol. 5, no. 2, 2019.

[12] R. Chunara *et al.*, "Telemedicine and Healthcare Disparities: A Cohort StudH in A Large Healthcare System in New York City During COVID-19," *J. Am. Med. Informatics Assoc.*, vol. 28, no. 1, 2021.

[13] A.-M. Rosland *et al.*, "Patient-Centered Medical Home Implementation and Improved Chronic Disease Quality: A Longitudinal Observational Study," *Health Serv. Res.*, vol. 53, no. 4, 2017.

[14] P. Worley, "Why We Need Better Rural and Remote Health, Now More Than Ever," *Rural Remote Health*, vol. 20, no. 1, 2020.

[15] M. H. Türkkanı, T. Özdemir, F. Göksel, and Ç. Özdilekcan, "Configuration of Palliative Care Clinics and Integration with Home Health Care Services: Current Practice in Turkey," *Cyprus J. Med. Sci.*, vol. 5, no. 3, 2020.

[16] C. C. Foster, R. K. Agrawal, and M. M. Davis, "Home Health Care For Children With Medical Complexity: Workforce Gaps, Policy, And Future Directions," *Health Aff.*, vol. 38, no. 6, 2019.

[17] M. Ardianysah and Jukenly, "Design And Development Point Of Sale System With DSS (Decision Support System) Using SDLC Research Method," *2nd Conf. Manag. Business, Innov. Educ. Soc. Sci.*, pp. 164–177, 2022.